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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------------|------------------|
| 10/722,934  | 11/26/2003  | Michael Wayne Lane   | YOR920030505US1<br>(163-21) | 9639             |
| 24336   | 7590        | 08/20/2004           | EXAMINER                    |                  |
| KEUSEY, TUTUNJIAN & BITETTO, P.C.<br>14 VANDERVENTER AVENUE, SUITE 128<br>PORT WASHINGTON, NY 11050 |             |                      | WILLIAMS, ALEXANDER O       |                  |
|   |             |                      | ART UNIT                    | PAPER NUMBER     |
|   |             |                      | 2826                        |                  |

DATE MAILED: 08/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/722,934

**Applicant(s)**

LANE ET AL.

**Examiner**

Alexander O Williams

**Art Unit**

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 10-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

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Serial Number: 10/722934    Attorney's Docket #: YOR920030505US1(163-21)  
Filing Date: 11/26/04;

Applicant: Lane et al.

Examiner: Alexander Williams

Applicant's election with traverse of Group I (device claims 1-9) filed 6/4/04 is acknowledged.

Applicant's arguments on pages 5 and 6 is not found to be persuasive. In the examination of claims Group I (claims 1 to 9) the Examiner would be interested in searching for the final structure of the semiconductor device claimed. In the examination of Group II (claims 10 to 20) the Examiner would be interested in the step claimed to achieve the semiconductor device claimed. Therefore, the two Groups would require a search in different art units and class. Each of the Groups have searches in different art units and classes that would unduly burden the Examiner to evaluate all claims on their merit at the full time. This is not found persuasive because of the reasons detailed in the last Office action.

The requirement is still deemed proper and is therefore made FINAL.

This application contains claims 9-20 drawn to an invention non-elected with traverse. A complete response to the final rejection must include cancellation of non-elected claims or other appropriate action (see 37 CFR § 1.144 & MPEP § 821.01).

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 4, 8 and 9 are rejected under 35 U.S.C. § 102(e) as being anticipated by Shimamoto et al. (US. Patent Application Publication # 2002/0102826 A1).

1. Shimamoto et al. (figures 1 to 16e) specifically figure 16e show a solid state device comprising: a first material (3 or 19 or 1 or 2); a second material 6; a barrier layer 4 formed between the first material and the second material to prevent a diffusion between the first material and the second material, the barrier layer includes a metal form of at least one of **Ru** and **Re**.
3. The device as recited in claim 1, Shomamoto et al. show wherein the first material 3 is a dielectric and the second material 6 is a metal.
4. The device as recited in claim 1, Shomamoto et al. show wherein the first material 19 is a conductor and the second material is a metal 6.
8. The device as recited in claim 1, Shomamoto et al. show wherein device is a semiconductor device and the first material includes a semiconductor material 1.
9. The device as recited in claim 1, Shomamoto et al. show wherein the barrier layer includes a thickness of 700 Angstroms or less (see paragraph [0012]).

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Claims 2 and 5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Shimamoto et al. (US. Patent Application Publication # 2002/0102826 A1) in view of Matsuse et al. (U.S. Patent Application Publication # 2002/0197856 A1).

Shimamoto et al. Is cited for showing the features of the claimed invention as detailed above, but fail to explicitly show wherein the metal form includes a hexagonal close packed structure and wherein the metal is copper.

Matsuse et al. Is cited for showing a barrier film wiring structure and electrodes of semiconductors device having a barrier film. Specifically, Matsuse et al. (figures 1 to 14) specifically figure 1 discloses A solid state device comprising: a first material 8 or 15 or 4; a second material 16; a barrier layer 14 formed between the first material and the second material to prevent a diffusion between the first material and the second material, the metal form includes a hexagonal close packed structure for the purpose of having a low amount of oxygen contamination and high thermal stability.

2. The device as recited in claim 1, the combination with Shomamoto et al. show wherein the metal 16 form includes a hexagonal close packed structure (see 16 in figure 1).

5. The device as recited in claim 1, the combination with Shomamoto et al. show wherein the first material 4 includes copper.

Therefore, it would have been obvious to one of ordinary skill in the art to use Matsuse et al.'s metal form including a hexagonal close packed structure to modify Shomamoto et al.'s metal form for the purpose of having a low amount of oxygen contamination and high thermal stability.

Initially, and with respect to claims 6 and 7, note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hira, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Fitzgerald, 205 USPQ 594, 596 (CCPA); In re Marosi et al., 218 USPQ 289 (CAFC); and most recently, In re Thorpe et al., 227 USPQ 964 (CAFC, 1985) all of which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that Applicant has burden of proof in such cases as the above case law makes clear.

Claims 6 and 7 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Shimamoto et al. (US. Patent Application Publication # 2002/0102826 A1).

As to the grounds of rejection under section 103, see MPEP § 2113.

The listed references are cited as of interest to this application, but not applied at this time.

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| Field of Search  | Date    |
|--|---------|
| U.S. Class and subclass:<br>257/751,758,773,774,759,760,762                                  | 8/18/04 |
| Other Documentation:<br>foreign patents and literature in<br>257/751,758,773,774,759,760,762 | 8/18/04 |
| Electronic data base(s):<br>U.S. Patents EAST  | 8/18/04 |

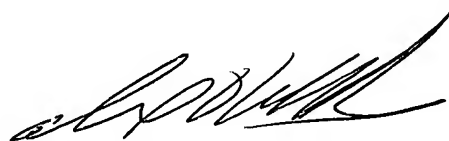
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander O Williams whose telephone number is (571) 272 1924. The examiner can normally be reached on M-F 6:30 AM -7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272 1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AOW  
8/19/04



Primary Patent Examiner  
Alexander O. Williams